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(54) CONTROL OF STRUCTURES OF ALUMINUM AND ALUMINUM ALLOY

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a method for controlling the structures of aluminum and aluminum alloy and to provide a product thereof.

SOLUTION: A high-speed rotating tool is brought into contact with the surface of an aluminum or aluminum-alloy member to carry out the structure control of the aluminum or aluminum alloy owing to the effect of heat treatment of the member due to the frictional heat between the tool and the surface of the member in combination with the effect of mechanical agitation of the member by the tool, by which the strength and hardness of the product can be locally increased. The number of revolutions of the tool is changed and/ or the area of the part where the tool and the member come into contact with each other is arbitrary changed to control the amount of heat generated by friction and change the heat treatment temperature of the member into arbitrary values and resultantly control the grain size and structure of the member to arbitrary sizes, by which the strength and hardness of the aluminum or aluminum alloy can be locally increased.

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